



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

MEMORANDUM TO: Project Engineers  
Project Design Engineers

FROM: G. R. Perfetti, P. E.  
State Bridge Design Engineer

DATE: August 5, 2005

SUBJECT: BRIDGE OVERLAYS

For box beam and cored slab bridges, detail either an asphalt or a lightly reinforced concrete overlay. The type of overlay shall be based on the bridge location and the traffic conditions.

In general, the concrete overlay is preferred for its durability and shall be specified on bridges that satisfy at least one of the following criteria:

- Bridges on NHS routes
- Bridges with design year ADT greater than 5,000
- Bridges with design year TTST greater than 100
- Low water bridges located in Divisions 11-14

Concrete overlays shall be reinforced with #3 (#10) bars spaced at 1'-0" (300mm) centers in both the longitudinal and transverse directions. This reinforcing steel mat shall be placed such that the 2" (50mm) clear cover is maintained throughout the overlay surface. Reinforcement in the transverse direction may be placed along the skew.

Where concrete overlay is detailed, place the following note on the plans:

***Placement of the concrete wearing surface shall occur after casting the concrete rail. The cost of the #3 (#10) bars cast with the concrete wearing surface shall be included in the unit price bid for concrete wearing surface. For concrete wearing surface, see special provisions.***

Since the concrete overlay is only lightly reinforced, avoid detailing relatively deep sections of the concrete overlay. If the roadway plans show a normal crown on a bridge that will have a concrete overlay, then request the Roadway Unit to revise that section of roadway to a constant superelevation to minimize the overlay thickness.

Project Engineers

MAILING ADDRESS:  
NC DEPARTMENT OF TRANSPORTATION  
STRUCTURE DESIGN  
1581 MAIL SERVICE CENTER  
RALEIGH NC 27699-1581

TELEPHONE: 919-250-4037  
FAX: 919-250-4082  
WEBSITE: [WWW.DOH.DOT.STATE.NC.US](http://WWW.DOH.DOT.STATE.NC.US)

LOCATION:  
CENTURY CENTER COMPLEX  
BUILDING A  
1000 BIRCH RIDGE DRIVE  
RALEIGH NC

Project Design Engineer  
Page 2  
August 5, 2005

Bridges that do not meet the above criteria may be detailed with an asphalt overlay. When an asphalt overlay is shown, detail a flat-faced rail with drainage slots through the rail parapet whenever possible. Note that rails rated at a Test Level 2, such as the 1BMR, should only be used on non-NHS routes where the posted speed limit does not exceed 45 mph.

The attached Figure 6-131 has been developed to assist in selecting the overlay type.

This policy shall be effective with the November 2005 letting. The Design Manual will be revised at a later date.

GRP/JJV/snj

Attachments

[Figure 6-131, Figure 6-131 \(Metric\)](#)

cc: R. V. Keith, P. E., with attachments  
R. A. Raynor, Jr., P. E., with attachments  
E. C. Powell, Jr., P. E., Attn: R. Hancock, P. E., with attachments  
J. H. Emerson, P. E., with attachments  
T. S. Drda, P. E., FHWA, with attachments  
J. A. Bennett, P. E., with attachments  
D. Henderson, P. E., with attachments  
V. Barbour, P. E., with attachments